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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/211,538	12/15/98	ZHAO Z	3064-128

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EXAMINER	
ANDERSEN, H	
ART UNIT	**PAPER NUMBER**
2862	

DATE MAILED: 08/01/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/211,538	Zhao
Examiner	**Group Art Unit**
Henry Andersen	2862

☒ Responsive to communication(s) filed on *Dec 15, 1998*

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) *1-35* is/are pending in the applicat

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *28-35* is/are rejected.

☒ Claim(s) *1-27* is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☒ The drawing(s) filed on *Dec 15, 1998* is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☒ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *2*

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include numerous instances of reference numbers not mentioned in the description. The following instances are given only as examples:

A. Reference numbers 14a and 16a in Figures 1A, 4A, 5A, 6A, 7A, 8A, and 9A.

B. Reference numbers 114a and 116a of Figures 10A, 11A, 12A and 13A; reference numbers 114b and 116b in Figures 10B, 11B, 12B, and 13B.

All the drawings and the entire description should be thoroughly checked for other instances of reference numbers appearing in the drawings but not mentioned in the description. Correction is required. See Paragraph 5C below for further discussion of this problem.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include instances of reference numbers mentioned in the description but not appearing in the drawings. The following instance is given only as an example:

Reference numbers 424c and 424d mentioned on Page 57, lines 11 and 13, respectively, but not appearing in Figure 23 A.

All the drawings and the entire description should be thoroughly checked for other instances of reference numbers mentioned in the description but not appearing in the drawings. Correction is required.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference number 12a has been used to designate both the inner concave surface of pole piece 12 in Fig. 6A, and the outer convex surface of pole piece 12 in Fig. 6B. All the drawings should be thoroughly checked for other instances of the same reference number being used to designate different parts. Correction is required.

Specification

4. The abstract is objected to for the appearance of the extraneous word "are" near the end of the fourth line of text.

5. The specification is objected to because of inconsistent terminology, or terms which are not clear or exact. The specification should be revised carefully, with no new matter being introduced. Some examples of inconsistent terminology, or terms which are not clear or exact are:

A. With regard to Page 15, lines 8 and 9; Page 53, lines 19-21; and numerous other instances throughout the specification, the word "diameter" is used in a manner contrary to its normal meaning. A diameter is defined as a chord of a circle that passes through the circle's center. As used in the cited instances and

throughout the specification, the diameter in most instances is not even a straight line. The examiner believes the problem can be remedied in most instances by simply deleting the word "diameter."

B. With regard to Page 15, lines 8-10; Page 53, lines 20-21; and numerous other instances throughout the specification, the examiner suggests that the present wording of (example given is from page 15) "a convex inner diameter surface 15a of circular arcuate pole segment 15 radially extend from rotational axis RA over approximately 190 degrees" be replaced with "a convex inner surface 15a of circular arcuate pole segment 15 that is swept out by the outer end of a radius having its opposite end located on rotational axis RA, and that extends circumferentially over approximately 190 degrees." The suggested wording eliminates the problem created by the original words "radially extend," which normally mean to move outward from a center of a circle in a radial direction, but are not used in that normal sense here.

C. With regard to Page 16, lines 10-11; Page 40, lines 5-6; and numerous other instances prior to Page 40, a planar pole surface of a magnet is described as facing a "rectangular prismatical pole segment." It instead would be desirable to describe the planar pole surface of the magnet as facing the "planar inner surface xx of pole piece yy," as is done from Page 42 onward in the specification (but omit the word "diameter," as per Paragraph 5A above). This would solve the problem

of these planar inner surfaces having reference numbers in the drawings, but not being mentioned in the description (see Paragraph 1 above).

D. With regard to Page 16, line 9; Page 28, line 16; Page 59, last line; and numerous other locations throughout the specification, incorrect reference numbers are cited. For example:

I. With regard to Page 16, line 9, "surface 15" should be corrected to "surface 15a."

ii. With regard to Page 28, line 16, "piece 11" should be corrected to "piece 111."

iii. With regard to Page 59, last line, "area 121g" should be corrected to "area 121h."

E. With regard to Page 16, lines 10-11; Page 37, lines 18-20, 23; and numerous other locations throughout the specification, the word "spatial" needs to be changed to the adverbial form "spatially."

F. With regard to Page 50, lines 1 and 3; Page 67, line 21; and numerous other locations throughout the specification, the plural form "axes" should be replaced by the singular form "axis."

G. With regard to Page 24, line 2; Page 52, penultimate line; and numerous other locations throughout the specification, the wrong word is used, or the proper word is misspelled. For example:

I. With regard to Page 24, line 2, "arcutate" should be replaced with "arcuate."

ii. With regard to Page 52, penultimate line, "are" should be replaced with "is."

H. With regard to Page 67, line 10; and Page 69, lines 10-11; the polarity of each of the pole surfaces mentioned in each of these lines should be reversed.

I. With regard to Page 48, lines 14 and 16, "ninety (90) degrees" should be corrected to "two hundred seventy (270) degrees."

J. With regard to Page 49, lines 20-21; and Page 52, line 9; the wrong figure numbers are cited. The correct citations are:

I. On Page 49, lines 20-21, change "19A-19C" to "1A-1C."

ii. On Page 52, line 9, change "24B" to "21B."

K. With regard to Page 56, line 10; Page 65, line 16; and various other locations throughout the specification, a missing word needs to be inserted. The corrections for these two examples are:

I. On Page 56, line 10, the word "facing" should be inserted before "convex."

ii. On Page 65, line 16, the word "over" should be inserted after "LA/RA."

L. With regard to Page 58, last line; Page 68, last line; and various other locations in the specification, spaces need to be inserted between improperly joined words and/or numbers ("524is" on Page 58, last line; "535facing" on Page 68, last line).

M. With regard to Page 67, last line, through the first five lines of Page 68, there is no Hall effect device 118 in the embodiment of the invention under discussion.

N. With regard to page 62, last line; and Page 67, line 18, use of the word "contiguous" might dispel any potential question concerning how the Hall-effect device could be located in what at first glance appear to be two completely different working gap areas. Therefore, the suggested text would read: ". . . located within contiguous working air gap areas xx and yy."

Appropriate correction is required.

Claim Objections

6. Claims 1 through 35 are objected to because of the following informalities:

A. All 35 claims repeatedly refer to a pole piece having an "inner diameter surface" (in Claim 1 this terminology appears in lines 6, 8, 11, 13, 16, and 29). This use of the word diameter is contrary to its normal meaning. A diameter is defined as a chord of a circle that passes through the circle's center. As used in almost all instances in the claims, the "diameter" is not even a straight line, but is instead a curved inner or outer surface of a pole piece. The examiner believes the

"diameter" problem can be remedied in most instances by simply deleting the word "diameter."

B. All the independent claims, and therefore all 35 claims, use the terminology "radially extending" (in Claim 1 this terminology appears in lines 6 and 8) in a manner contrary to its usual meaning. To "radially extend" normally means to move outward from the center of a circle along the direction of a radius, yet the surface to which this terminology is being applied extends circumferentially about the center of the circle, rather than radially. The examiner suggests terminology such as the following be used: "an inner surface swept out over the definable range of rotation by the outer end of a radius having its opposite end located on a second rotational axis."

C. All the independent claims, and therefore all 35 claims, have an extraneous "a" appearing before the word "sense" in a paragraph concerning the disposition of a magnetic flux sensitive transducer within a working air gap area (in Claim 1 this extraneous "a" appears in line 26 of the claim).

7. Claims 5, 10, and 14 are objected to because they claim ". . . a means adjoined to said loop pole piece for concurrently sensing each degree of rotation of the control shaft about the first rotational axis . . ." First, the word concurrently introduces ambiguity because it is unclear as to which two or more events or processes are occurring at the same time. Secondly, the specification does not enable any means for directly sensing rotation of the control shaft about the

first rotational axis. The specification enables direct sensing only at the loop pole piece and the magnets adjacent or near to it. It is the attachment of the loop pole piece and the magnets to the control shaft that permits the indirect determination of the rotation of the control shaft. These three claims need to be reworded to reflect the fact that the rotation of the control shaft is determined indirectly by directly sensing the rotation of the loop pole piece and its magnets.

8. Claim 8 is objected to because the words "concave" and "convex" appear to have been switched. The examiner believes this embodiment corresponds to Figs. 8A-8C. To be consistent with Claim 7, "concave" in the second line of Claim 8 should be changed to "convex," and "convex" in the third line of Claim 8 should be changed to "concave."

9. Claim 15, and Claims 16-19 which are dependent upon Claim 15, are objected to because they claim that both the first and second pole surfaces of the second magnet face the inner surface of the second pole piece. Clearly, opposite surfaces of a magnet cannot both face the same surface of a pole piece. The examiner believes that the first appearance of the word "second"in line 23 of Claim 15 should be changed to "first," so that the line refers to the "first pole surface of said second magnet."

10. Claims 15 and 28 are objected to for failing to make clear that the first working air gap area and the second working air gap area are contiguous with each other, and may be considered parts of a single larger working air gap area (see Claim 15, lines 32-42, and Claim 28, lines 33-52). Without this clarification, a reader might wonder how one transducer could be located in what appear to be two different working air gap areas.

11. Claim 28 is objected to for having the word "pole" missing after the word "second" in line 12 of the claim.

Claim Rejections - 35 USC § 112

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 28, and Claims 29 through 35 which are dependent upon Claim 28, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. Claim 28 recites the limitation "said second loop magnet" in lines 13, 42 and 48 of the claim. There is insufficient antecedent basis for this limitation in the claim. In addition, Claim 28 recites the limitation "said first loop magnet" in line 47 of the claim. There also is insufficient antecedent basis for this limitation, for line 12 of the claim refers only to "a loop magnet."

B. Claim 31 recites the limitation "said first magnet." There is insufficient antecedent basis for this limitation in the claim or in Claim 28 on which it is dependent. It should be noted that the second line of Claim 31 introduces the "second loop magnet" for the first time.

C. Claim 33 recites the limitation "said second loop magnet" in lines 16 and 22 of the claim. There is insufficient antecedent basis for this limitation in the claim.

D. It should be noted that Claims 34 and 35 contain the limitation "said loop magnet" (second line of each claim). Although there is antecedent basis for "said loop magnet" in line 12 of Claim 28, nevertheless Claim 28's limitations of "said first loop magnet" and "said second loop magnet" render uncertain the antecedent basis of the limitation "said loop magnet" contained in Claims 34 and 35.

Allowable Subject Matter

13. Claims 1 through 27 are allowable if rewritten to rectify the objections raised against them in Paragraphs 6 through 10. Claims 1, 6, 11, 15, and 20 are independent claims which are allowable because the prior art does not anticipate all the elements of each of these claims. Claims 2 through 5, 7 through 10, 12 through 14, 16 through 19, and 21 through 27 are dependent claims that add elements to their respective allowable independent claims, and therefore they too are allowable. Claims 1 through 27 claim a magnetic rotational position sensor comprising a loop pole piece connected to a rotating shaft and having flux generating magnets disposed within various positions in the air gap area of the loop pole piece, and a magnetic flux sensitive transducer also disposed in the air gap area of the loop pole piece to measure the change in flux as the loop pole piece undergoes rotation simultaneously with its connected shaft. The prior art does not reveal a magnetic rotational position sensor comprising a loop pole piece having flux generating magnets

and a flux sensitive transducer disposed in the air gap area of the loop pole piece as disclosed in the application under examination.

Conclusion

14. Any inquiry concerning this communication from the examiner should be directed to Henry Andersen whose telephone number is (703) 308-6251. The examiner can normally be reached Monday through Friday between 8:30 A.M. and 5:00 P.M. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christine Oda, can be reached on (703) 305-4908. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 and (703) 308-7724.

HSA

July 31, 2000

Christine K Oda

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